Apple II
Technical Notes

ProDOS 8
#12:   Interrupt Handling

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This Technical Note clarifies some aspects of ProDOS 8 interrupt handlers.

Although the *ProDOS 8 Technical Reference Manual* (section 6.2) documents interrupt handlers and includes a code example, there still remain a few unclear areas on this subject matter; this Note clarifies these areas.

All interrupt routines must begin with a `CLD` instruction. Although not checked in initial releases of ProDOS 8, this first byte will be checked in future revisions to verify the validity of the interrupt handler.

Although your interrupt handler does not have to disable interrupts (ProDOS 8 does that for you), it must <u>never</u> re-enable interrupts with a 6502 `CLI` instruction. Another interrupt coming through during a non-reentrant interrupt handler can bring the system down.

If your application includes an interrupt handler, you should do the following before exiting:

1. Turn off the interrupt source. Remember, 255 unclaimed interrupts will cause system death.
2. Make a `DEALLOC_INTERRUPT` call before exiting from your application. Do not leave a vector installed that points to a routine that is no longer there.

Within your interrupt handler routines, you must leave <u>all</u> memory banks in the same configuration you found them. Do not forget anything: main language card, main alternate $D000 space, main motherboard ROM, and, on an Apple IIe, IIc, or IIGS, auxiliary language card, auxiliary alternate $D000 space, alternate zero page and stack, etc. This is very important since the ProDOS interrupt receiver assumes that the environment is absolutely unaltered when your handler relinquishes control. In addition, be sure to leave the language card <u>write-enabled</u>.

If your handler recognizes an interrupt and services it, you should clear the carry flag (`CLC`) <u>immediately</u> before returning (`RTS`). If it was not your interrupt, you set set the carry (`SEC`) immediately before returning (`RTS`). Do <u>not</u> use a return from interrupt (`RTI`) to exit; the ProDOS interrupt receiver still has some housekeeping to perform before it issues the `RTI` instruction.

Further Reference

- *ProDOS 8 Technical Reference Manual*